



# Authorizations and Permits for Protected Species (APPS)

File #:

## Applicant Information

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## Project Information

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File Number: 18908  
Application Status: Application Complete  
Project Title: Skagit Floodplain side channel fish use monitoring  
Project Status: New  
Previous Federal or State Permit: NA  
Permit Requested: • ESA Section 10(a)(1)(A) permit (Pacific fish/invertebrates)  
Where will activities occur? Washington (including Columbia River and offshore waters)  
State department of fish and game/wildlife: N/A  
Research Timeframe: Start: 01/07/2016 End: 12/31/2020

Sampling Season/Project Duration: Work will be completed between February and June each year for a five year period. This period targets the typical outmigration season for juvenile salmon in the Skagit River. Up to three different sites will be sampled each year. Each site may be sampled up to three times each year for a maximum of nine sampling trips per year. Up to three locations within each site will be sampled during each trip. Sampling at any one site will not occur more than once during a 30 day period.

Abstract: The Skagit Fisheries Enhancement Group (SFEG) is a nonprofit organization formed in 1990 to engage communities in habitat restoration. SFEG will work with volunteers to document fish use of restoration sites before and after projects are completed. Fish sampling will focus on low-velocity off-channel habitats in the Skagit River floodplain between Sedro Woolley and Marblemount, Washington. Floodplain side channels and sloughs are preferred habitat for coho salmon. ESA-listed Chinook salmon, steelhead, and bull trout are also known to use such sites for rearing and could be encountered during sampling. Work will occur between February and June each year for 5 years. This period targets the typical outmigration season for juvenile salmon. Up to 3 sites will be sampled each year. No site will be sampled more than 3 times/year or more frequently than once every 30 days. The project will help SFEG identify sites in need of restoration and target enhancement efforts. Post-project sampling will confirm project effectiveness and guide future projects so that ongoing work focuses on appropriate areas and results in conditions that provide high quality rearing habitat. By involving trained volunteers in these surveys SFEG will provide community members with an opportunity to observe juvenile fish under controlled conditions. Those individuals can then become ambassadors who pass that knowledge along to friends and neighbors, helping build support for future projects. Sampling will consist of seine netting from the bank. Fish will be gathered in the net and kept in the water. The team leader will retrieve the fish using a small dip-net, quickly identify them to species, and then immediately release each fish to the water outside of the seine. Take is expected to consist primarily of harassment. Incidental mortality may also occur due to direct contact as nets are pulled through the water, or indirectly due to stress. No fish will be purposely killed or collected.

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## Project Description

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SFEG is a non-governmental organization that has developed cooperative relationships with local landowners, conservation groups, government agencies and tribes. Much of the work is done by volunteers guided and supported by professional restoration staff members. The SFEG is one of 14 Regional Fisheries Enhancement Groups in Washington State that were formed in association with WDFW in 1990 to educate and involve the public in salmon enhancement activities across the state. SFEG focuses a great deal of their effort on restoring side channel habitat along the lower mainstem of the Skagit River.

Recent projects have included removal and/or replacement of blocking culverts, restoration of tributaries impacted as part of past land use activities, and riparian buffer restoration. The principal goal has been to increase access to off-channel areas and to enhance the quality of juvenile salmonid rearing habitat in those areas. Two of the most common questions asked by grant agencies, technical reviewers, and during the public educational process are whether or not the efforts have been successful in attracting fish, and what species of fish have benefitted from the efforts. It is the goal of this project to be better able to respond to these important questions, as well as to help select sites for future restoration efforts.

Purpose: Studies proposed to be conducted under the Scientific Research Permit have the following goals:

1. Target enhancement efforts. Population studies conducted to identify juvenile fish species use and relative numbers in off-channel areas being considered for potential enhancement actions. These data may be used, for example, to evaluate the presence of suspected migration blockages and inability of fish to access otherwise valuable habitat. If high numbers of fish, especially ESA-listed fish, are found under existing conditions, efforts may be limited to simple riparian restoration rather than more intrusive in-channel actions. The data can also be added to grant requests to help funding agencies identify the most appropriate projects for limited restoration funds based on current regional goals.
2. Identify benefits. Population studies conducted after enhancement projects are completed to identify any change in species use and relative numbers. These data will help identify the value of different types of projects and help guide future efforts. The data will be shared with other regional enhancement groups and local governments and tribes to increase the

knowledge of the system as a whole.

3. Public education. Much of the work being done by the SFEG can be completed only with the cooperation and participation of local citizens and private landowners. A very common request by people is to better understand the benefits that can be expected due to the proposed actions. The data being collected will help explain the expected benefits using site-specific information, rather than rely entirely on theory. Local volunteers will help gather the information and have the ability to observe juvenile fish in their community under controlled conditions. They then become ambassadors who pass that knowledge along to friends and neighbors, helping build support for future projects.

#### Location

All sampling will take place on side channels and floodplain portions of tributaries to the Skagit River. These are areas commonly used by outmigrating juvenile anadromous salmon, but which have suffered due to the installation of undersized culverts and riparian clearing.

The areas targeted by the SFEG for enhancement, and where sampling will take place, are typically very low in gradient (< 1%), 15 to 50 feet wide, one to three feet deep, and silt or sand-bedded. Velocities are normally well below 1 foot/second.

Prior to sampling in any location, the SFEG will contact other regional enhancement groups, tribes, and governmental organizations to identify any population survey work that has already been completed in that area. If information is available, it will be reviewed to determine whether or not the information is sufficient to preclude further studies. Likewise, the SFEG will make all information available to other groups via dissemination to the federal and state databases such as WDFW's Priority Habitat and Species, and SalmonScape programs.

#### Staff and Equipment

Sampling will be conducted by a team of 4 to 6 people depending on location. The team will consist of the following members:

- Team Leader – this person will be a SFEG employee with a degree in biology and a minimum of 5-years of applicable fish handling experience to include seining and netting. The team leader will be responsible for all aspects of sampling including site selection, volunteer training, and ensuring that work is completed correctly and with minimal disturbance to the environment.
- Assistant Leader - this person will have a minimum of 1-years of applicable fish handling experience to include at least 5 sampling trips that included seining. The assistant leader will help train and coordinate volunteers during the sampling process.
- Volunteers – between 2 and 4 volunteers will assist with sampling. The volunteers will help pull the net in and take notes and photos. They may also help with post-sampling monitoring of the area to identify any evidence of fish stress or mortality.

Description:

Each team will have at minimum one person qualified as a Team Leader and one person qualified as an Assistant Leader. The two team leaders will be the only people directly handling any fish and will have primary responsibility for setting the seine.

Equipment will consist primarily of one seine and one or two small dipnets. The seines employed by the SFEG are lead-lined with floats, between 40 and 80 feet long, and 6-feet high. They are made with 1/8" knotless mesh. Dipnets are typical aquarium nets. A detailed description of our proposed methods and actions that will be taken to minimize adverse effects is provided later in this application.

#### Anticipated Effects

SFEG has conducted fish seining in the past with rare mortality; however, it is possible that one or two fish could be injured or killed in a given sampling session. If unintentional mortality is observed, sampling at that site will be halted. SFEG's team leader will attempt to determine the mechanism of injury so that similar effects can be avoided in the future. If injury or mortality is observed on more than one occasion each year SFEG will halt the program and ensure that the survey team is given additional training.

SFEG does not have the capability to process tissue samples for analysis. However, SFEG regularly cooperates with other regional groups that have ongoing genetic studies. Any ESA-listed fish mortalities will be retained, kept on ice or frozen, and then offered to the Skagit River System Cooperative, WDFW, or NOAA for use in their programs. Notes regarding time, date, and precise location of death will be recorded for submittal with the sample.

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## Supplemental Information

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No species are being specifically targeted by the sampling work. Enhancement work being completed by the SFEG focuses almost entirely on off-channel habitat along the lower Skagit River. This primarily benefits juvenile salmon that spend a year or more in fresh water before outmigrating to Puget Sound. These species include Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), and steelhead trout (*O. mykiss*). These three species, and primarily coho salmon based on past work, are the most likely to be encountered during sampling.

### Status of Species:

Other salmonid species that are present in the lower Skagit River, but less likely to be found using off-channel habitat are bull trout (*Salvelinus confluentus*), Dolly Varden (*S. malma*), sockeye salmon (*O. nerka*), chum salmon (*O. keta*), pink salmon (*O. gorbuscha*), and cutthroat trout (*O. clarkii*). Other resident fish species that have been identified in the lower Skagit River include mountain whitefish (*Prosopium williamsoni*), Salish sucker (*Catostomus catostomus*), three-spine stickleback (*Gasterosteus aculeatus*), torrent sculpin (*Cottus rhotheus*), prickly sculpin (*Cottus asper*), coastrange sculpin (*Cottus aleuticus*), largescale sucker (*Catostomus macrocheilus*), eastern brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), lake trout, (*Salvelinus namaycush*), peamouth chub (*Mylocheilus caurinus*) and pumpkinseed (*Lepomis gibbosus*).

Three of these species have been listed under the federal Endangered Species Act and one is proposed for listing (Table 1). Chinook salmon and steelhead are the most likely to be encountered during the proposed population sampling efforts. Bull trout spend little time in lower Skagit River side channels where habitat conditions are generally unsuitable. But they have been found foraging in these areas and may be encountered on occasion.

A suitable location will be selected for each set by the team leader. A suitable site will be defined as having good access, little potential for net snagging on debris and vegetation, and will allow operations on the bank with minimal vegetation disturbance. The site will not be modified to improve sampling suitability.

### Methods:

A seine will be laid out on the bank. One of the team leaders will take the leading end and walk out into the sampling area and arc back to the bank as needed to encompass a suitable sampling area. The net will be fed into the water and then anchored by a second person. A third and fourth person may be used in the water to keep the net in place and help it over obstacles as the lead line is tightened and brought back to the beach. The sampling area (defined by the perimeter of net and bank) will be gradually constrained as the net is retrieved until a wetted area no smaller than about 5 sq.ft. is achieved next to the bank. To prevent damage to fish, nobody will be allowed to stand in this area. One or two people will sit on the bank and using a dip net, will retrieve the fish, quickly identify each one without touching, and then immediately return each fish to the water outside of the seine. This entire process from arrival at the site to removal of the net takes on average about 30 minutes or less. The total time inwater depends on the number of fish captured in the set. The team leader will keep track of time and if fish identification is not complete prior to 15-minutes after first entering the water, the net will be opened and all remaining fish will be allowed to volitionally return to open water without further sampling. In addition, if more than five ESA listed individuals are counted in any one set, all remaining fish will be immediately released without further sampling.

Fish will be observed in the net by sliding a white plastic tray under the net while keeping the net submerged. The team leader may transfer 1-2 fish of each non-ESA listed species encountered into a Photarium to demonstrate identifying marks to volunteers. The fish will be transferred to the Photarium without removing it from the water, and will be held in the Photarium in at least 4 inches of water for no more than 5-minutes. If signs of distress are observed the fish will be immediately returned to the water.

When all fish have been removed, the net will be lifted over the water and inspected to make sure no fish are still entrapped in the folds. The net will then be removed from the water. At least three observers to include one team leader will watch the area for a minimum of 10 minutes post-sampling for signs of distressed or dead fish. Distressed fish will be identified by erratic swimming close to the surface; "gulping"; convulsions; sluggish or lack of movement; or any behavior deemed unusual. Distressed fish will be identified if possible to species without removal. They will be left in the water. Any dead fish will be removed and identified. ESA-listed fish will be retained and provided to the Skagit River System Cooperative, WDFW, or NOAA for use in ongoing genetic studies. All other species will be returned to the water.

Lethal Take: Not Applicable

Sampling will be completed fairly quickly and infrequently to help avoid adverse behavioral and physiological effects of stress on the local fish population. Handling and physical constraint will be minimal and fish will not be removed from the stream environment for more than a few seconds. Nevertheless, some stress will be induced. This could result in temporary cessation of feeding, lack of spatial awareness leading to abandonment of preferred habitat and increased predation, or organ failure and death.

Anticipated Effects on Animals: Crowding with the net and flight response into the net or substrate could cause physical damage leading to parasitic, bacterial, or other pathogen infestations that stress or kill some fish. Some fish may become impinged between the net and the substrate, or between sampler's boots and the substrate and be killed outright.

Past experience with similar research showed that the fish populations rapidly returned to their pre-sampling state within 10 to 30 minutes after the site was vacated. Quicker restoration times were achieved when fewer fish were netted.

A number of mitigation measures will be implemented to avoid and minimize the potential for both direct and indirect effects on listed species. The measures have been designed with the primary goal of reducing habitat destruction, direct mortality, and stress. Stress can be reduced by limiting handling, and by avoiding changes in environmental factors to the greatest extent possible. Handling stress will be reduced by limiting activities to infrequent and relatively quick survey periods at each site. Environmental change induced stress will be minimized by not removing fish from the instream habitat for more than a few seconds.

Proposed measures can be generally categorized as follows: minimize physical disturbance to in-water and riparian habitat; minimize period of activity in-water and adjacent to the creek; utilize a sampling protocol that avoids and minimizes fish handling; and post-sampling monitoring. The measures below are part of the proposed action and shall be followed during all sampling under the Scientific Research Permit.

#### Habitat Disturbance

- Sampling schedules will be coordinated with other groups active in the area to minimize potential activities in any one area.
- Sampling site selection shall be completed prior to arrival of the sampling team. Each work area and access route shall be identified (and flagged if necessary). Clear written directions and photos of the site shall be prepared for use by all subsequent teams.
- As part of sampling site selection, the team leader shall inspect the area for evidence of recent spawning (e.g. redds). No sampling will take place where there is evidence of recent spawning in the immediate vicinity of the area to be sampled and for 10 channel widths downstream.
- A site shall be selected where a team of 4 to 6 people can access and operate with all expected gear and without significant damage to existing riparian vegetation, bank stability, in-water vegetation, or important inwater habitat features.
- Sampling teams shall be limited to more than 6 people at any one site.

#### Sampling Considerations

- Sampling at any one site will not occur more than once during a 30-day period, and not more than three times in one year.
- Teams not experienced in working together shall practice a net set on dry land before proceeding to the sampling site. Specific tasks shall be identified for each member and

Measures to  
Minimize Effects:

practiced until everybody is familiar and comfortable with expectations for their particular job before, during, and after sampling.

- This sampling process from arrival at the site to removal of the net from the water shall take no longer than 30 minutes. The team leader shall keep track of time. If fish identification is not complete prior to 15 minutes after first entering the water, the net will be opened and all remaining fish will be allowed to voluntarily return to open water without further sampling.
- If more than five ESA listed fish individuals (in any combination of species) are found in any one set, all remaining fish will be immediately released without further sampling in that area for at least 30 days.

Sampling Protocol

- All equipment that will enter the water (e.g. nets, boots, dip nets, thermometers, etc.) shall be decontaminated prior to arrival at the sampling location. Decontamination shall consist either of complete air drying for a minimum of one week, or by dipping in a dilute chlorine solution (500 ppm) for 60 minutes followed by rinsing and air drying for at least 12 hours.
- No equipment that has been used in other watersheds shall be employed for this project until complete disinfection with bleach and air drying has been completed.
- No sampling will be completed when water temperature in the area to be seined exceeds 66 oF (18 oC).
- Sampling shall be directed and controlled by the team leader at all times.
- Only the minimum number of people necessary to control the net shall enter the water.
- Retrieval of the net shall proceed slowly and carefully to help avoid eliciting startle responses to the greatest extent possible. It is better to have some fish escape than to risk entanglement or possible crushing in net folds or against the substrate.
- Nobody should be in the water in the area between the net and the bank to avoid crushing fish that may be present in concentrated numbers.
- When identifying and transferring fish from the impoundment area back to the open river, they should be kept in the stream for as long as possible. No fish should be removed from the water for more than a few seconds.

Monitoring

Post-sample monitoring of the site will be conducted after each seine set. At least three observers to include one team leader will watch the area within three channel widths upstream and downstream for a minimum of 10 minutes post-sampling for signs of distressed or dead fish. Distressed fish will be identified by erratic swimming close to the surface; "gulping", convulsions, sluggish or lack of movement; or anything deemed particularly unusual. Distressed fish will be identified if possible to species without removal. They will be left in the water. Any dead fish will be removed and identified. ESA-listed fish will be retained and provided to the Skagit River System Cooperative or to NOAA for use in ongoing genetic studies. All other species will be returned to the water.

SFEG is one of 14 Regional Fisheries Enhancement Groups formed in the 1990s to help communities restore salmon populations, and to educate and engage citizen volunteers in the restoration process. Restoration Ecologist Sue Madsen has over 20 years of experience in fluvial geomorphology and fisheries, and has obtained or assisted with several previous projects authorized by protected species permits. SFEG Biologist Kyle Koch has been leading SFEG field biology studies for the past five years, and has worked with Dr. Eric Beamer on sampling/surveying juvenile Chinook using methods similar to those proposed here at several sites including McElroy Slough, Edgewater Slough, South Skagit dike setback and others.

Resources Needed to  
Accomplish  
Objectives:

Dr. Beamer and his crew at SRSC, Erin Lowery of Seattle City Light, Rick Hartson from the Upper Skagit Indian Tribe, and Jose Carrasco of Herrera Inc., are all resources that SFEG may call upon for advice and assistance with the project. Those individuals will be invited to participate in sampling events at sites where their organizations are partnering with SFEG. SFEG Board President Ned Currence, Nooksack Tribal Fish biologist, is also available to provide guidance and support.

Funding support for the project is provided by WDFW's ALEA Program, who will cover the cost of materials and supplies via contract #15-03731 (attached), and by Patagonia, who are helping fund the project via a grant from their World Trout Initiative (Award Letter attached).

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 Jose Carrasco jcarrasquero@herrerainc.com  
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Disposition of Tissues: Any dead fish will be identified. ESA-listed fish will be retained and provided to the Skagit River System Cooperative, WDFW, or NOAA for use in ongoing genetic studies. All other species will be returned to the water.

Public Availability of Product/Publications: SFEG will compile data on the number and species of fish encountered during sampling events. Data will be made available to the public by posting them on our organizations website. www.skagitfisheries.org

### Federal Information

Federal Agency	Type	Authorization Number and Title	Date Signed	Expiration Date	Listing Units/Stocks Covered	Comments
U.S. Fish and Wildlife Service (FWS)	Section 10 permit	TBD			Bull Trout, Entire range (USFWS Threatened)	We are working with Ginger Phalen (USFWS) and other RFEG to obtain this permit coverage.

### Location/Take Information

#### Freshwater Location

Research Area: Pacific Ocean State: WA Sub Basin (4th Field HUC): Lower Skagit Stream Name: Middle Skagit River Begin Mile: 18.8 End Mile: 78.1  
 Location Description: All sampling will take place on side channels and floodplain portions of tributaries to the Skagit River between Sedro Woolley (RM 18.8; Lat 48.471 Lon -122.295) and Marblemount (RM 78.1; Lat 48.521 Lon -121.431).

#### Take Information

Line	Ver	Species	Listing Unit/Stock	Production /Origin	Life Stage	Sex	Expected Take	Indirect Mort	Take Action	Observe /Collect Method	Procedure	Run	Transport Record	Begin Date	End Date
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1	Salmon, Chinook	Puget Sound (NMFS Threatened)	Natural	Juvenile	Male and Female	250	2	Capture/Handle/Release Fish	Seine, Beach		Fall	N/A	1/7/2016	6/30/2020
2	Steelhead	Puget Sound (NMFS Threatened)	Natural	Juvenile	Male and Female	250	2	Capture/Handle/Release Fish	Seine, Beach		Mixed	N/A	1/7/2016	6/30/2020
3	Salmon, Chinook	Puget Sound (NMFS Threatened)	Listed Hatchery Adipose Clip	Juvenile	Male and Female	250	2	Capture/Handle/Release Fish	Seine, Beach		Fall	N/A	1/7/2016	12/31/2020

## Project Contacts

Responsible Party: Alison Studley  
 Primary Contact: Sue Madsen  
 Principal Investigator: Kyle A Koch

### Other Personnel:

Name	Role(s)
Andy Beckman	Co-Investigator
Joe George	Co-Investigator
Susan W Madsen	Co-Investigator
Bengt Miller	Co-Investigator

## Attachments

Certification of Identity - P18908T1118908signatureauthentication.pdf (Added Sep 29, 2015)  
 Contact - Kyle A Koch C17887T5KyleResume2015.pdf (Added Sep 29, 2015)  
 Contact - Kyle A Koch C17887T5MadsenResume2015.pdf (Added Sep 29, 2015)  
 Contact - Kyle A Koch C17887T5MadsenResumeMarch2015.docx (Added Sep 28, 2015)  
 Resources Needed - P18908T15ALEA-22VolunteerMonitoring2015-2017Awardletter.pdf (Added Sep 28, 2015)  
 Resources Needed - P18908T15PatagoniaAwardLetter.pdf (Added Sep 28, 2015)

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## Status

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Application Status:	Application Complete		
Date Submitted:	October 14, 2015		
Date Completed:	October 14, 2015		
FR Notice of Receipt Published:	November 6, 2015	Number: 2015-28333	
Comment Period Closed:	December 7, 2015	Comments Received: No	Comments Addressed: No
Last Date Archived:	January 7, 2016		

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- ESA Section 10(a)(1)(A) permit (Pacific fish/invertebrates)

Current Status: Issued Status Date: January 7, 2016

Section 7 Consultation: Formal Consultation

NEPA Analysis: Categorical Exclusion

Expire Date: December 31, 2020

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## Reports

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